

## Bitcoin: Where Two Worlds Collide

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# Bitcoin: Where Two Worlds Collide

## **Abstract**

There are over 275 virtual currencies in existence today. One of these currencies is Bitcoin, the largest and most recognised virtual currency in the world. With its exponential growth over recent years, Bitcoin is bringing a degree of permanence for, and dependability on virtual currencies that can no longer be ignored by regulators. While an increase in international regulatory activity over the past 12 months suggests that some governments understand this, Australian regulators appear reluctant to act. In addition to examining Bitcoin's operational system in detail, this article examines the affect that Bitcoin is having on two key features of the financial system: (1) the money laundering and illicit finance supply system; and (2) the payment system. By comparing the effectiveness of the response measures enacted by Australian and international regulators in Canada, Singapore, the United States, and the United Kingdom, this article demonstrates that even though Australia's current payment system policy is capable of addressing the threats posed by virtual currencies, the current money laundering and terrorist financing regulations fail to satisfy Australia's international obligations, and stifle the legitimate use and development of virtual currencies in Australia.

## **Keywords**

currency, virtual, financial, system, crime, international, regulation

# Bitcoin: Where Two Worlds Collide

RUSS MARSHALL\*

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## Abstract

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## I Introduction

The borderless and unregulated virtual world has an insatiable appetite for consuming the real world and, with so few norms and even less regulation, the collision of these two worlds has resulted in the creation of a new, untamed 'Wild West'.<sup>1</sup> It is here, on the modern day frontier, that the contemporary entrepreneurs foxtrot and the criminals tango. To pick on the tango dancers, the annual cost of cybercrime to the global economy in 2013 was reported to be more than \$400 billion. Cybercrime affected UK retailers to the tune of more than \$850 million. More than 40 million people in the United States had their personal information stolen, and Japanese banks reported losing \$110 million.<sup>2</sup> Indeed, the modern day frontier is a utopia for some and a dystopia for others.

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<sup>1</sup> Jason Healey, 'Obama's Cyberwarfare Strategy Will Backfire', US News Week, (online) 8 March 2013 <<http://www.usnews.com/opinion/blogs/world-report/2013/03/08/clandestine-american-strategy-on-cyberwarfare-will-backfire>>.

<sup>2</sup> Center for Strategic and International Studies, 'Net Losses: Estimating the Global Cost of Cybercrime' (Report, McAfee, June 2014) <<http://www.mcafee.com/au/resources/reports/rp-economic-impact-cybercrime2.pdf>>.

The valued safe haven that this frontier provides for criminals is well documented. However, this is not the only headache for regulators struggling to tame the Wild West. The frontier also acts as an excellent incubator for a new financial system, a system of virtual economies and currencies that freely interact with the real economy. This system, the virtual financial system, is the focus of this article.

Within the virtual financial system, there are over 275 virtual currencies in existence and all of them circulate without the need for a physical coin or bill.<sup>3</sup> While originally intended as a medium of exchange within online games, modern day virtual currencies are specifically designed to serve as a medium of exchange for real goods and services, and as an alternative to real world currencies.<sup>4</sup> Bitcoin is a virtual currency that operates without: (1) a central bank to issue it; (2) a commercial bank to store it; or (3) a credit card company to transfer it.<sup>5</sup> It is undoubtedly the largest, most widely recognised, and most successful virtual currency to date. For this reason, this article will use Bitcoin as the primary vehicle to examine how regulators are attempting to maximise the benefits and mitigate the risks created by virtual currencies. The article focuses on two features of the financial system:

1. The money laundering and illicit finance supply system (Part III); and
2. The payment system (Part IV).

The article demonstrates how Bitcoin has affected each of these features, and compares the effectiveness of the response measures enacted by international and Australian regulators. Before exploring each of these features in detail, the article begins in Part II, with an examination of what virtual currencies are and how Bitcoin operates.

## **II Virtual Currency and Bitcoin**

### ***A Defining Virtual Currencies***

As there are over 275 virtual currencies in existence,<sup>6</sup> an appropriate starting point for this article is to explore what virtual currencies are and where Bitcoin sits in this space. Although industry traditionally relates the term ‘virtual currency’ with a ‘digital unit of exchange that is not backed by a government issued legal tender’, the term currently lacks a formal

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<sup>3</sup> See Andre Mayer, ‘Bitcoin Has a Future, But Maybe Not as a Currency’, *CBC News* (online), 4 July 2014 <<http://www.cbc.ca/news/technology/Bitcoin-has-a-future-but-maybe-not-as-a-currency-1.2686045>>.

<sup>4</sup> See, eg, US Government Accountability Office, GAO-13-516 Report to US Senate Committee on Finance, *Virtual Economies and Currency: Additional IRS Guidance Could Reduce Tax Compliance Risks*, May 2013, 3.

<sup>5</sup> Nicholas Plassaras, ‘Regulating Digital Currencies: Bringing Bitcoin Within The Reach of The IMF’ (2013) 14 *Chicago Journal of International Law* 377, 378.

<sup>6</sup> See Mayer, above n 3.

legal definition.<sup>7</sup> Rather than developing a concise definition for the term, financial regulators have sought to catalogue virtual currencies by using one of two classification systems:

1. The interaction classification; or
2. The transaction classification.<sup>8</sup>

### **1 *Interaction classification***

As depicted in figure 1, the interaction classification system catalogues virtual currencies according to how the currency interacts with the ‘real economy’:<sup>9</sup>

1. ‘Closed-flow systems’: In a closed-flow system, the virtual currency holds no value outside of the virtual environment. Closed-flow currencies do not interact with the real economy. An example of a closed-flow currency is a currency issued and used to purchase user upgrades within an online game.<sup>10</sup>
2. ‘Hybrid-flow systems’: A hybrid flow currency can be used to purchase both virtual and real goods and services. A user can purchase hybrid flow virtual currencies with government issued currencies; however, the virtual currency cannot be exchanged back into government issued currencies.<sup>11</sup> In this respect, a hybrid flow currency is ‘uni-directional’. An example of a hybrid flow currency is the WoW token in World of Warcraft.<sup>12</sup>
3. ‘Open-flow systems’: In an open-flow system, the virtual currency can purchase both real and virtual goods and services, and can be readily exchanged for government issued currency.<sup>13</sup> In this respect, an open-flow system is ‘bi-directional’. Second life and Bitcoin are examples of an open-flow system.

<sup>7</sup> See US Government Accountability Office, ‘GAO-13-516 Report’, above n 4, 3.

<sup>8</sup> See Payments Policy Department, Payment Systems Board Reserve Bank of Australia, *Bitcoin: Rehashing Ideas of Stone and Gold* (2013) 11.

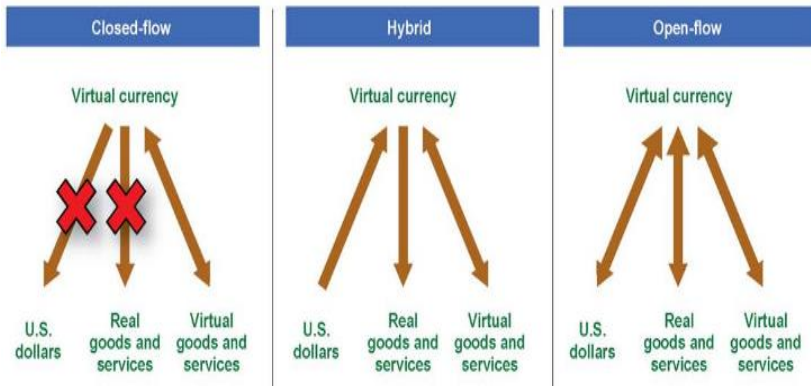
<sup>9</sup> Ibid. The Reserve Bank of Australia uses the terms ‘closed’, ‘uni-directional’ and ‘bi-directional’ within this classification rather than the terms ‘closed’, ‘hybrid’ and ‘open’.

<sup>10</sup> See US Government Accountability Office, ‘GAO-13-516 Report’, above n 4, 4.

<sup>11</sup> Ibid.

<sup>12</sup> See Andy Chalk, ‘World of Warcraft New Token Currency Sheds a Quarter of its Value in One Day’ *PC Gamer* (online), 8 April 2015 <<http://www.pcgamer.com/world-of-warcrafts-new-token-currency-sheds-a-quarter-of-its-value-in-one-day/>>.

<sup>13</sup> See US Government Accountability Office, ‘GAO-13-516 Report’, above n 4, 5.

Figure 1: Types of virtual currency systems<sup>14</sup>

## 2 Transaction classification

The transaction classification system catalogues virtual currencies according to how currency transactions are processed:<sup>15</sup>

1. Centralised systems: Centralised virtual currency systems have a single administering authority that issues the currency and has the authority to withdraw the currency from circulation. In addition, the administering authority issues rules for the use of the currency and maintains a central payment ledger.<sup>16</sup>
2. Decentralised systems: Decentralised virtual currency systems have no central administering authority. Validation and certification of transactions are performed by users of the system and do not require a third party to perform intermediation activities.<sup>17</sup>

Bitcoin, the most widely circulated virtual currency,<sup>18</sup> satisfies the definition of an open-flow system and a decentralised system. The next Part of this article provides an in-depth examination of the defining attributes and operation of Bitcoin. In brief, however, Bitcoin is an open-flow virtual currency because it can be: (1) used to purchase both real and virtual goods and services, and (2) readily exchanged for government issued currencies.<sup>19</sup> Bitcoin is also a decentralised virtual currency

<sup>14</sup> Ibid 4.

<sup>15</sup> See Payments Policy Department, above n 8, 11.

<sup>16</sup> See US Government Accountability Office, GAO-14-496 Report to US Senate Committee on Homeland Security and Governmental Affairs, *Virtual Currencies: Emerging Regulatory, Law Enforcement, and Consumer Protection Challenges*, May 2014, 5.

<sup>17</sup> Ibid.

<sup>18</sup> See US Government Accountability Office, 'GAO-13-516 Report', above n 4, 5.

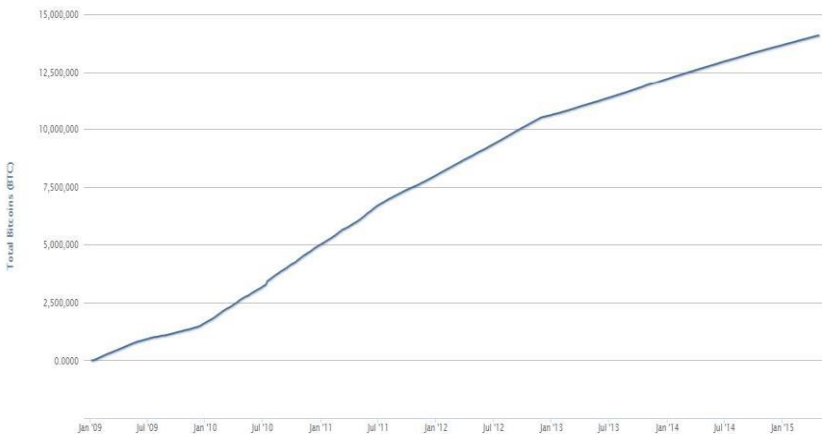
<sup>19</sup> See, eg, Kashmir Hill, '21 Things I Learned About Bitcoin From Living On It For A Week', *Forbes* (online), 16 June 2014 <<http://www.forbes.com/sites/kashmirhill/2013/05/09/25-things-i-learned-about-bitcoin-from-living-on-it-for-a-week/>>. The first purported 'real' financial transaction using Bitcoin occurred on 18 May 2010. Two large pizzas were purchased for 10,000 Bitcoin, valued at \$0.0025 per Bit. See Lazzlo Hanyrez 'Pizza for Bitcoins?' on Simple Machines, *Bitcoin Forum* (18 May 2010) <<https://bitcointalk.org/>>

because it does not have a central administering authority. The users of the system create, validate, and certify all of the systems transactions.

### B Bitcoin Supply

Bitcoin is created by a process of *mining*, which mimics the extraction of precious metals such as gold. Reaffirming the decentralised nature of the Bitcoin system, anyone can mine and produce or *discover* a Bitcoin by applying computer-processing power to solve a complex algorithm.<sup>20</sup> Figure 2 shows the total number of Bitcoin in circulation over time. There are currently 14 460 000 Bitcoin in circulation,<sup>21</sup> and current mine rates account for the discovery of approximately 3,925 new Bitcoin every day.<sup>22</sup>

Figure 2: Total Bitcoin in circulation<sup>23</sup>



The Bitcoin algorithm fixes the total number of discoverable Bitcoin to 21 million and slows the generation of Bitcoin by adjusting the *difficulty* of discovering Bitcoin overtime.<sup>24</sup> Currently, the reward for solving the mining algorithm is 50 Bitcoin(s). However, this number is halved with

index.php?topic=137.msg1195#msg1195>; Timothy Lee, 'Five Years of Bitcoin In One Post', *Washington Post* (online), 3 January 2014 <<http://www.washingtonpost.com/blogs/the-switch/wp/2014/01/03/five-years-of-bitcoin-in-one-post/>>.

<sup>20</sup> See US Government Accountability Office, 'GAO-13-516 Report', above n 4, 2.

<sup>21</sup> See Blockchain, *Total Bitcoin in Circulation* (3 August 2015) <<https://blockchain.info/charts/total-bitcoins>>.

<sup>22</sup> See Blockchain, *Bitcoin Currency Statistics* (3 August 2015) <<https://blockchain.info/stats>>.

<sup>23</sup> Blockchain, *Total Bitcoin in Circulation* (27 April 2015) <<https://blockchain.info/charts/total-bitcoins>>. Kindly reproduced with the permission of the copyright holder.

<sup>24</sup> See Plassaras, above n 5, 384.

every 210,000 Bitcoin created.<sup>25</sup> In this respect, the supply of Bitcoin is regulated by the laws of mathematics and is highly predictable.

While anyone can mine for Bitcoin, the mining process is an expensive function of computer processing power and electricity.<sup>26</sup> In fact, for the average user, the cost to mine a Bitcoin is now significantly greater than its return.<sup>27</sup> Simplified and speedier mining processes are key characteristics of new virtual currencies, such as *LiteCoin* and *PPCoin*.<sup>28</sup>

### C Bitcoin Demand

Bitcoin's value is determined by an open market, much the same as the exchange rate between different world currencies.<sup>29</sup> Figures 3 and 4 show the volatility of Bitcoin's market price over the past two years and 30 days respectively (as at the time of writing). Price volatility is a significant concern for open-flow currencies as it undermines user confidence and system growth. Given that the supply of Bitcoin is stable, and that the system lacks a central administering authority, the price fluctuation can only be attributed to changes in market demand.

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<sup>25</sup> For example, in November 2012 production rates halved from the previous rate of 50 Bitcoin every ten minutes and will continue to halve every four years. See, eg, Kevin Dowd, *New Private Monies: A Bit-Part Player?* (The Institute of Economic Affairs, 2014) 41–2.

<sup>26</sup> While this article does not explore the issue, an interesting debate is developing regarding the 'real world' environmental costs associated with Bitcoin mining and electricity consumption. See, eg, Mark Gimein, 'Virtual Bitcoin Mining Is a Real-World Environmental Disaster', *Bloomberg* (online), 12 April 2013 <<http://www.bloomberg.com/news/2013-04-12/virtual-bitcoin-mining-is-a-real-world-environmental-disaster.html>>.

<sup>27</sup> See Blockchain, *Bitcoin Currency Statistics* (26 April 2015) <[https://blockchain.info/stats?\\_ga=1.204702998.704799368.1404481538](https://blockchain.info/stats?_ga=1.204702998.704799368.1404481538)>. One estimate based on data available in December 2013 is that miners spend \$17 million for a return of \$4.4 million. At current Bitcoin market rates, this relationship is even more lopsided. See, eg, Tim Fernholz, 'Mine over Matter: Miners Spend \$17 million a day for a shot at \$4.4 million of Bitcoin', *Quartz* (online), 11 December 2013 <<http://qz.com/156479/miners-spend-17-million-a-day-for-a-shot-at-4-4-million-of-bitcoin/>>.

<sup>28</sup> See Payments Policy Department, above n 8, 12.

<sup>29</sup> See Jerry Brito and Andrea Castillo, *Bitcoin A Primer for Policy Makers* (Mercatus Center George Mason University, 2013) 4.



Figure 3: Market price over the past 2 years (USD)<sup>30</sup>

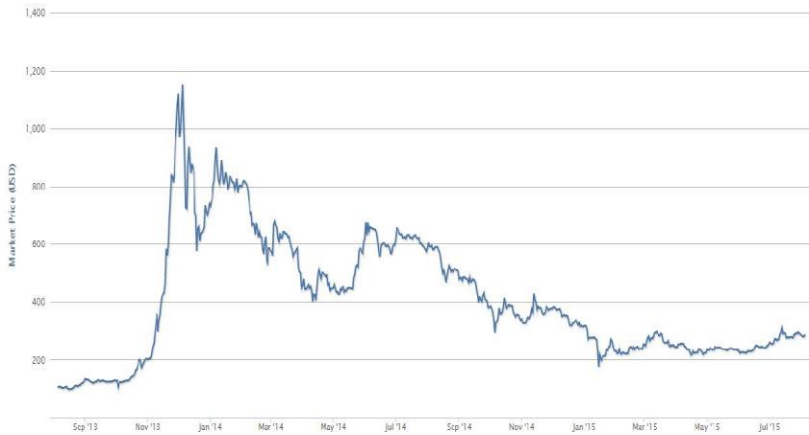


Figure 4: Market price over the past 30 days (USD)<sup>31</sup>



Despite Bitcoin's rapid rise to stardom and its market dominance in the virtual currency space (Bitcoin's market valuation is 95% larger than its nearest competitor *Litecoin*),<sup>32</sup> the scale of use of Bitcoin remains that of a 'niche payment network' when compared with traditional payment

<sup>30</sup> Blockchain, *Market Price* (3 August 2015) <[https://blockchain.info/charts/market-price?timespan=2year&showDataPoints=false&daysAverageString=1&show\\_header=true&scale=0&address=](https://blockchain.info/charts/market-price?timespan=2year&showDataPoints=false&daysAverageString=1&show_header=true&scale=0&address=)>. Kindly reproduced with the permission of the copyright holder.

<sup>31</sup> Blockchain, *Market Price* (3 August 2015) <[https://blockchain.info/charts/market-price?timespan=30days&showDataPoints=false&daysAverageString=1&show\\_header=true&scale=0&address=](https://blockchain.info/charts/market-price?timespan=30days&showDataPoints=false&daysAverageString=1&show_header=true&scale=0&address=)>. Kindly reproduced with the permission of the copyright holder.

<sup>32</sup> See William Luther and Lawrence White, 'Can Bitcoin Become a Major Currency?' (Working Paper in Economics, No 14-17, *George Mason University Department of Economics*, 2014) <[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2446604](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2446604)>.

systems.<sup>33</sup> Table 1 compares the daily transaction volume and transaction quantity of Bitcoin with other payment networks.

*Table 1: Daily transaction volume and transaction quantity of select payment networks*<sup>34</sup>

Payment System	Volume (USD)	Quantity
Bitcoin	55 665 784	62 231
Western Union	216 000 000	633 000
PayPal	397 000 000	7 700 000
Amex	2 434 000 000	14 521 000
MasterCard	9 863 000 000	93 578 000
Visa	13 518 000 000	212 603 000

As discussed in Part IV, transaction volume is an important metric in determining when to regulate Bitcoin as a payment system.

## **D The Bitcoin Marketplace**

### **1 Entry and exit**

In addition to mining Bitcoin, users can acquire circulating Bitcoin by:

1. accepting them as gifts;
2. accepting them as payment for the provision of goods or services; or
3. purchasing them from third party exchanges or from public kiosks (Bitcoin ATM).<sup>35</sup>

Bitcoin exchanges are the main entry and exit nodes for the Bitcoin system. Exchanges operate order books, matching buyers and sellers of Bitcoin and the price at which they are willing to trade. Until its collapse in February 2014, the Tokyo based Mt. Gox was the largest Bitcoin exchange, accounting for over 80 per cent of all Bitcoin currency trades.<sup>36</sup> There are currently no exchanges located in Australia. However, a number of ‘intermediaries to exchange’ (akin to a brokerage) do operate in Australia.<sup>37</sup>

Bitcoin kiosks are the latest craze in the virtual currency space. Australia currently has eight Bitcoin ATM machines in operation, two in Sydney, two in Melbourne, two in Brisbane, one in Canberra and one in

<sup>33</sup> Craig Elwell et al, ‘Bitcoin: Questions, Answers, and Analysis of Legal Issues’ (2013) Report No 4339 *US Congressional Research Service*, 3.

<sup>34</sup> See Coinometrics, *Daily Transactions and Transactional History of Payment Systems* (4 July 2014) <<http://www.coinometrics.com/bitcoin/btix>>.

<sup>35</sup> See US Government Accountability Office, ‘GAO-14-496 Report’, above n 16, 7.

<sup>36</sup> Robert McMillan, ‘The Inside Story of Mt. Gox, Bitcoin’s \$460 Million Disaster’, *WIRED Magazine* (online), 3 March 2014, <<http://www.wired.com/2014/03/bitcoin-exchange/>>.

<sup>37</sup> See Payments Policy Department, above n 8, 3–4.

Nimbin, with service providers planning an ambitious rollout of 100 ATM machines in 2015.<sup>38</sup> Bitcoin Kiosks allow users to purchase Bitcoin currency and either take physical possession of a coin or plastic card, or deposit Bitcoin into an online account. The physical Bitcoin issued from the ATM marks the first time a currency has crossed from digital to physical currency, permitting hand-to-hand currency circulation of a virtual currency.<sup>39</sup>

## 2 *Storage*

A user receives Bitcoin through an 'address', which effectively acts as a bank account number. New addresses are visible to the entire Bitcoin user network and signify either the source or destination of Bitcoin in a transaction. A private key (known only to the address owner) is used to authenticate a transaction.<sup>40</sup> To ensure anonymity in the transaction, most users create a new address for each transaction. Users with multiple addresses create 'virtual wallets',<sup>41</sup> which are essentially virtual safety deposit boxes designed to store and manage the addresses and private keys.

It is at the virtual wallet level that Bitcoin has proved most vulnerable to security breaches. Gaining control of private keys by penetrating virtual wallets allows hackers to authenticate transactions and steal Bitcoin. Many of the most notable breaches are a result of hackers penetrating wallets held with exchanges and third party providers. For example, in March 2014 a hacker stole approximately \$8.7 million in Bitcoin from online wallets stored at the Mt Gox exchange.<sup>42</sup>

## 3 *Transactions*

Bitcoin transfers are regularly reported to be anonymous; however, this is not technically correct.<sup>43</sup> An anonymous transaction is an unrecorded exchange between two strangers. In contrast, a non-anonymous transaction is recorded and requires validation by a third-party intermediary to whom the buyer and seller's identities are known, for example, an online credit card purchase.<sup>44</sup> Bitcoin transactions are

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<sup>38</sup> See ABA Technology Pty Ltd, *Bitcoin ATM Locations* (17 July 2014) <<http://abatech.com.au/>>; Bitcoin ATM Map (17 July 2014) <<http://bitcoinatmmmap.com/>>; Coin ATM Radar (17 July 2014) <<http://coinatmradar.com/>>; Matthew Raggatt, 'Canberra Latest Addition to Bitcoin Boom with High-tech ATM', *The Sydney Morning Herald* (online), 19 July 2014 <<http://www.smh.com.au/digital-life/digital-life-news/canberra-latest-addition-to-bitcoin-boom-with-hightechatm-20140719-zuri2.html>>.

<sup>39</sup> See Dowd, above n 25, 49.

<sup>40</sup> See Payments Policy Department, above n 8, 4.

<sup>41</sup> *Ibid.*

<sup>42</sup> See Derek Dion, 'I'll Gladly Trade You Two Bits On Tuesday For A Byte Today: Bitcoin, Regulating Fraud in the Economy of Hacker-Cash' (2013) 1 *Journal of Law, Technology & Policy* 165, 184–7.

<sup>43</sup> Cf US Government Accountability Office, 'GAO-13-516 Report', above n 3, 8.

<sup>44</sup> See Elwell, above n 33, 3.

pseudonymous rather than anonymous.<sup>45</sup> While several characteristics of the system suggest that Bitcoin is anonymous—there being complete encryption of the identity of the transacting parties and an absence of a third party intermediary—unlike an anonymous transaction, a record of every transaction is produced and stored on the public ledger.

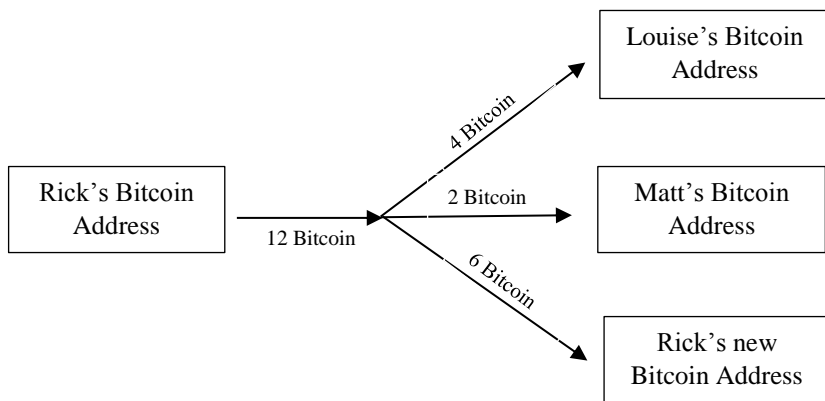
The existence of the public ledger allows third parties (for example, law enforcement, exchanges, and hackers) to track and monitor Bitcoin transfers. As demonstrated in Part III, this feature provides an opportunity to apply existing anti-money laundering and counter terrorism legislation to the system.

Bitcoin transactions occur through a *transaction message*, which has two components:

1. Inputs: the source address(es); and
2. Outputs: the destination address(es).

Suppose, for example, that Rick holds 12 Bitcoin and wishes to send four Bitcoin to Louise and two to Matt. Rick will input 12 Bitcoin into the transaction message and the message will have three outputs: four Bitcoin to Louise, two Bitcoin to Matt and six Bitcoin to Rick. The six Bitcoin transferred to himself, effectively the remainder, is known as the *change* to the transaction.<sup>46</sup> Rick has the option to transfer this change back to the original source address or to a new address. Irrespective of the address that the change is delivered to, it is recorded on the public ledger as a six Bit transaction. Figure 5 illustrates this transfer process.

Figure 5: Transaction message process



As noted, a transaction can only be initiated when it has been authenticated using the source's private key. The final step in the transaction is *confirmation*, which occurs when the transaction is recorded in the public ledger. At this point, the network prevents a user

<sup>45</sup> Ibid.

<sup>46</sup> See Payments Policy Department, above n 8, 5.

from illicitly re-spending a coin (double spending).<sup>47</sup> Many commentators identify this step as the key innovation in this technology as it removes the need for a trusted third party and the associated intermediary costs.<sup>48</sup> A Bitcoin transaction is irreversible once confirmation has occurred. In this respect, there is no chargeback risk.<sup>49</sup>

### III The Criminal Threat

#### A *The Nature of the Threat*

Having reviewed the defining attributes of Bitcoin, it will come as no surprise that unregulated virtual currencies, particularly decentralised and open-flow virtual currencies, can act as a critical enabler for the tango dancers (criminals and terrorists). In fact, the New York Department of Financial Services has declared that unregulated virtual currencies are the ‘Wild West for narco-traffickers and other criminals that threaten national security’.<sup>50</sup>

There are several reasons for policymakers to be apprehensive about the illicit use of Bitcoin and other virtual currencies. Two significant challenges stand out: (a) the use of virtual currencies for illicit purchases, and (b) the use of virtual currencies for money laundering.

#### B *Illicit Purchases*

The deep net’s infamous Silk Road has been referred to as ‘the most sophisticated and extensive criminal marketplace on the internet today’,<sup>51</sup> and the ‘Amazon.com of illegal drugs’.<sup>52</sup> From February 2011 to October 2013, Silk Road took advantage of the anonymising network *Tor* and the pseudonymous nature of Bitcoin to create a vast digital marketplace of illicit products. To put the scale of Silk Road into perspective, at the time of its detection 11.75 million Bitcoin were in circulation and the site’s revenues were purported to be in the order of 9.5 million Bitcoin.<sup>53</sup> The closure of Silk Road in October 2013, and the seizure of 29,656 Bitcoin,<sup>54</sup>

<sup>47</sup> See Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System* (2008) (unpublished white paper) <<http://bitcoin.org/bitcoin.pdf>>.

<sup>48</sup> See, eg, Adrian Blundell-Wignall, ‘The Bitcoin Question: Currency Verses Trust-Less Transfer Technology’ (OECD Working Papers on Finance, Insurance and Private Pensions No 37, OECD, 2014) 8.

<sup>49</sup> William Luther and Lawrence White, ‘Can Bitcoin Become a Major Currency?’ (Working Paper Series, Social Science Research Network, 2014) 6 <[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2446604](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2446604)>.

<sup>50</sup> Benjamin Lawsky, ‘Notice of Inquiry on Virtual Currencies’ (12 August 2013) New York State Department of Financial Services <<http://dfs.ny.gov/about/press2013/memo1308121.pdf>>.

<sup>51</sup> Jared Kleiman, ‘Beyond Silk Road: Unregulated Decentralized Virtual Currencies Continue to Endanger US National Security and Welfare’, (2013) 4(1) *American University National Security Law Brief* 59, 69.

<sup>52</sup> Dowd, above n 25, 66.

<sup>53</sup> Kleiman, above n 51, 68.

<sup>54</sup> Brian Patrick, ‘Bidding on Bitcoin’, *The New Yorker* (online), 11 July 2014 <<http://www.newyorker.com/business/currency/bidding-on-bitcoin>>.

has not eliminated the problem of illicit trade or restored the reputation of Bitcoin. Other deep net black markets, such as *Black Market Reloaded*, *Sheep Marketplace* and *Silk Road 2.0*, continue to taunt law enforcement and tarnish Bitcoin's reputation.<sup>55</sup>

### C Money Laundering

Money laundering is the process of making illegally gained proceeds ('dirty money') appear legal ('clean'), and anti-money laundering laws are the government's attempt to curtail this process.<sup>56</sup> As Danton Bryans notes, money laundering is typically accomplished through a three-step process: (a) *placement*: where the dirty money is injected into the financial system; (b) *layering*: where the launderer transfers or converts the dirty money thereby dislocating it from the illegal source; and (c) *integration*: where clean money re-enters the financial system in a seemingly legitimate state.<sup>57</sup> Open and hybrid flow virtual currency systems enable money launderers to move illicit funds faster, more cheaply, and more discretely than ever before.<sup>58</sup> Within the Bitcoin system, both legitimate and illegitimate users are able to transfer money at near instantaneous speed to anywhere in the world, at little to no cost, while remaining virtually anonymous. The user's ability to exchange Bitcoin for other virtual and real currencies, to obfuscate by transferring Bitcoin through an endless number of nodes (addresses), and to readily exchange Bitcoin for government issued currency further frustrates anti-money laundering efforts.

Bitcoin's public ledger is not ideal for laundering, especially when compared with anonymous virtual currencies such as *Liberty Reserve*.<sup>59</sup> However, laundry service software such as *Bitmix*, *BitLaundry* and *Dark Wallet* enable users to establish a more anonymous system.<sup>60</sup> It is not surprising, therefore, that international regulators are now moving to strengthen their financial crimes regulations.<sup>61</sup>

<sup>55</sup> See Brito, above n 29, 25.

<sup>56</sup> See Danton Bryans, 'Bitcoin and Money Laundering: Mining for an Effective Solution' (2014) 89 *Indiana Law Journal* 441, 442.

<sup>57</sup> *Ibid.*

<sup>58</sup> *Ibid* 447.

<sup>59</sup> *Liberty Reserve* is a centralised open flow currency system based in Costa Rica that provided total anonymity to users. It was shut down in May 2013 – see Jerry Brito and Andrea Castillo, *Bitcoin A Primer for Policy Makers* (Mercatus Center, George Mason University, 2013) 25.

<sup>60</sup> See eg, Dowd, above n 25, 69–70; Andy Greenberg, 'Dark Wallet is About to Make Bitcoin Money Laundering Easier Than Ever', *WIRED* (online), 29 April 2014 < <http://www.wired.com/2014/04/dark-wallet/>>.

<sup>61</sup> See David Rountree, 'Champing at the Bitcoin': Bitcoin, Regulators and the Law' (2013) 32:4 *Communications Law Bulletin* 5, 6.

## **D International Regulations**

### **1 US regulation**

In the US, money transmitters are subject to both federal and state laws. At the federal level, the *Bank Secrecy Act*,<sup>62</sup> as implemented by the Department of Treasury Financial Crimes Enforcement Network ('FinCEN'), and the *USA PATRIOT Act* apply.<sup>63</sup> The net effect of these Acts is to:

1. require money transmission businesses to operate under a licence;
2. require money transmitters to keep records of their customers and report suspicious transactions and other data; and to
3. require money transmitters to implement anti-money laundering programs.<sup>64</sup>

In March 2013, FinCEN issued guidance on the application of the *Banking Secrecy Act* to open and hybrid system virtual currencies, including Bitcoin. This guidance confirmed that FinCEN would treat virtual currencies as money for the purposes of anti-money laundering.<sup>65</sup> Under this guidance:

1. Bitcoin users who use Bitcoin to purchase real or virtual goods and services are not subject to FinCEN regulation.
2. Bitcoin administrators or exchanges that (a) accept and transmit Bitcoin or (b) buy or sell Bitcoin, are money transmitters subject to regulation.
3. Bitcoin miners who use mined Bitcoin to purchase real or virtual goods and services are not subject to FinCEN regulation.
4. Bitcoin miners who sell mined Bitcoin to another party for real currency or its equivalent are money transmitters subject to regulation.<sup>66</sup>

At the state level, 49 states require money transmitters to obtain a state licence to operate.<sup>67</sup> In contrast with the federal laws, the purpose of state law is not to prevent or detect money laundering; rather, it is to increase

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<sup>62</sup> *Financial Recordkeeping and Reporting of Currency and Foreign Transactions Act of 1970*, 31 USC § 5311 (1970) (*Bank Secrecy Act*).

<sup>63</sup> *USA PATRIOT Act*, 18 USC § 1960 (2001).

<sup>64</sup> See Brito, above n 29, 29–30.

<sup>65</sup> See Department of Treasury Financial Crimes Enforcement Network, *Application of FinCEN's Regulations to Persons Administering, Exchanging, or Using Virtual Currencies*, Guidance FIN-2013-G001 (18 March 2013).

<sup>66</sup> *Ibid* 2, 3, 5.

<sup>67</sup> See Brito, above n 29, 29.

consumer protection regarding non-FDIC insured bank transfers.<sup>68</sup> Consequently, some states—such as New York State—are implementing a further layer of regulation on Bitcoin transmitters by imposing specific licencing requirements for Bitcoin businesses to comply with state-based reporting programs.<sup>69</sup>

## 2 Canadian regulation

On 19 June 2014, a Canadian bill amending the *Proceeds of Crime (Money Laundering) and Terrorist Financing Act*, SC 2000, received Royal Assent.<sup>70</sup> The purpose of this amendment was to capture persons and entities that deal in virtual currencies and, among other things, enhance the client identification, record keeping and registration requirements for money transmitters and exchange providers.<sup>71</sup> In addition, Bitcoin businesses are required to register with the Financial Transactions and Reports Analysis Centre of Canada ('FINTRAC').<sup>72</sup>

The amendment also prohibits banks from opening accounts for Bitcoin entities if the entity is unregistered, and as is the case with US federal law, the Canadian amendment applies to any person or entity *outside* Canada whom is providing money transmitter and exchange services directed at persons or entities inside Canada.<sup>73</sup>

## 3 Singaporean regulation

In March 2014, the Monetary Authority of Singapore ('MAS') issued guidance on the application of money laundering and terrorist financing regulation on virtual currency intermediaries, including Bitcoin intermediaries, in Singapore.<sup>74</sup> Citing the 'anonymous nature' of virtual currency transactions as the central issue, the MAS introduced a regulation that requires 'virtual currency intermediaries that buy, sell or facilitate the exchange of virtual currencies for real currencies to verify the identities of customers and report suspicious transactions'.<sup>75</sup> This

<sup>68</sup> See Aaron Greenspan, *Held Hostage: How the Banking Sector Has Distorted Financial Regulation and Destroyed Technological Progress*, 2011, Think Computer Corporation <[http://works.bepress.com/aaron\\_greenspan/1](http://works.bepress.com/aaron_greenspan/1)>.

<sup>69</sup> See Alex Hern, 'New York Proposes Licence for Bitcoin Trading', *The Guardian* (online), 21 July 2014 <<http://www.theguardian.com/technology/2014/jul/21/new-york-licence-bitcoin-trading>>.

<sup>70</sup> Pete Rizzo, 'Canada Amends National Law to Regulate Bitcoin Businesses', *CoinDesk* (online), 23 June 2014 <<http://www.coindesk.com/canada-amends-national-law-regulate-bitcoin-businesses/>>.

<sup>71</sup> *An Act to Implement Certain Provisions of the Budget Tabled in Parliament on February 11, 2014 and Other Measures*, SC 2014, Bill C-31, Division 19 s 256(2)(h.1).

<sup>72</sup> See Rizzo, above n 69.

<sup>73</sup> *An Act to Implement Certain Provisions of the Budget Tabled in Parliament on February 11, 2014 and Other Measures*, SC 2014, Bill C-31, Division 19 s 256(2)(h.1).

<sup>74</sup> See Monetary Authority of Singapore, 'MAS to Regulate Virtual Currency Intermediaries for Money Laundering and Terrorist Financing Risks' (Media Release, 13 March 2014) <<http://www.mas.gov.sg/news-and-publications/media-releases/2014/mas-to-regulate-virtual-currency-intermediaries-for-money-laundering-and-terrorist-financingrisks.aspx>>.

<sup>75</sup> *Ibid.*



regulation, which clearly targets hybrid and open-flow virtual currency systems, treats virtual currencies as ‘money’ and places virtual currency intermediaries in the same position as money chargers and remittance cash transaction businesses.<sup>76</sup>

The common effect of these amendments is to subject intermediaries and transmitters of hybrid and open-flow currencies to the regulatory controls imposed on traditional money transmitters and to mitigate the anonymous characteristics of these systems by imposing reporting and data collection obligations on users.

### E *Australian Regulation*

In Australia, the principal legislation that sets out the general principles and obligations for money laundering and terrorist financing, the *Anti-Money Laundering and Counter Terrorism Financing Act 2006* (Cth) (AML/CT), does not currently apply to Bitcoin. Section 5 of the AML/CT defines money to include e-currency. E-currency is defined narrowly as an internet-based electronic means of exchange that is:

1. backed either directly or indirectly by precious metal or bullion; and
2. not issued by or under the authority of a government body.<sup>77</sup>

As Bitcoin is not backed by precious metal or bullion, the AML/CT does not apply. This interpretation is consistent with public announcements made by the Australian Transactions Reports and Analysis Centre (‘AusTrac’).<sup>78</sup>

Unlike the US, Canada and Singapore, the Australian Government has no immediate intention of amending the AML/CT to capture Bitcoin or other virtual currencies. As recently as February 2014, the CEO of AusTrac observed that Bitcoin-based crime would not be a priority for the agency in the foreseeable future.<sup>79</sup>

In justifying this position, the CEO of AusTrac noted that the volatility and insecurity of Bitcoin, and other virtual currencies, are acting as a brake on mainstream usage.<sup>80</sup> While AusTrac is aware that:

digital currencies, such as those offered by Bitcoin, may become more attractive to criminal groups, particularly in response to tighter regulation and monitoring of established or traditional financial channels by both government and the traditional financial service providers themselves ... at this stage, the misuse of digital currencies and virtual worlds for money laundering is still very much an emerging vulnerability ... [that] may only be

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<sup>76</sup> Ibid.

<sup>77</sup> *Anti-Money Laundering and Counter Terrorism Financing Act 2006* (Cth) s 5.

<sup>78</sup> See Ursula Hogben, ‘The Legalities of Bitcoin: Australian Businesses are Using Bitcoin – What is The Legal Position?’ *Sydney Morning Herald* (online), 14 February 2014 <<http://www.smh.com.au/small-business/finance/the-legalities-of-bitcoin-20140214-32qu5.html#ixzz391waHRpb>>.

<sup>79</sup> Paris Cowan, ‘AusTrac Not Worried by Bitcoin’, *itnews* (online), 28 February 2014 <<http://www.itnews.com.au/News/373670,austrac-not-worried-by-bitcoin.aspx>>.

<sup>80</sup> Ibid.

of use to those conducting niche crimes in the cyber environment and individual or smaller scale illicit activity”.<sup>81</sup>

This position is remarkably similar to that taken in an April 2012 FBI Intelligence Assessment issued on Bitcoin.<sup>82</sup> In this assessment, the FBI concluded that criminals were unlikely to abandon traditional and established currencies for Bitcoin until it stabilised and grew in popularity.<sup>83</sup> The assessment also noted that Bitcoin was growing in popularity with cyber criminals.<sup>84</sup> As the reader will recall from Part II, Bitcoin has grown exponentially since April 2012, both in terms of the number of Bitcoin in circulation and value. Additionally, the 2013 discovery of high tech illicit networks, such as Silk Road, and illicit international money laundering operations has rendered the FBI assessment obsolete and prompted swift action from international regulators. This prompts the question — is Australia’s *watch and wait* approach to AML/CT obsolete?

The author suggests that it is. Australia should pursue a more proactive policy with regard to its AML/CT regulations. It is clear that Bitcoin is gaining more independence from fiat currency and is becoming more attractive to criminal organisations.<sup>85</sup> Even if this activity is predominately occurring extraterritorially, the objective of Australia’s AML/CT is to fulfil and address Australia’s *international obligations* in combating international money laundering and financing of terrorism.<sup>86</sup> Regulatory reform should reflect the growing international threat and aim not only to expand the scope of Australia’s AML/CT laws to include open and hybrid flow currencies, but also to assign responsibility for the statistical collection of economic virtual currency activity. This latter element is critical given that the traditional recorders of Australia’s financial systems, the banks, are turning a cold shoulder to Bitcoin businesses.

The lack of AML/CT regulatory certainty in Australia also carries a secondary effect for the market. Despite some high profile investments by major Australian banks (such as investment by Westpac Bank’s Reinventure Group into US based Coinbase,<sup>87</sup> Commonwealth Bank and

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<sup>81</sup> Rohan Pearce, ‘Money Laundering Using Virtual Worlds, Bitcoin on Watchdogs Radar’, *Computer World* (online), 15 August 2013 <[http://www.computerworld.com.au/article/433634/money\\_laundering\\_using\\_virtual\\_worlds\\_bitcoin\\_watchdog\\_radar/](http://www.computerworld.com.au/article/433634/money_laundering_using_virtual_worlds_bitcoin_watchdog_radar/)>.

<sup>82</sup> Federal Bureau of Investigation (FBI) Directorate of Intelligence, *Bitcoin Virtual currency: Unique Features Present Distinct Challenges for Deterring Illicit Activity*, FBI Intelligence Assessment (24 April 2012).

<sup>83</sup> *Ibid.*

<sup>84</sup> *Ibid.*

<sup>85</sup> See Brito, above n 29, 1.

<sup>86</sup> *Anti-Money Laundering and Counter Terrorism Financing Act 2006* (Cth) s 3.

<sup>87</sup> See James Eysers, ‘Coinbase to Push Bitcoin in Australia after Westpac VC Deal’ *Australian Financial Review* (online), 30 June 2015 <<http://www.afr.com/business/banking-and-finance/coinbase-to-push-bitcoin-in-australia-after-westpac-vc-deal-20150630-gi1c78>>.

ANZ Bank's investment into Ripple Labs), the Big Four Banks have largely paid Bitcoin businesses little attention.<sup>88</sup>

Furthermore, new customer due diligence rules introduced by AusTrac on 1 June 2014,<sup>89</sup> the international reach of foreign government money laundering legislation (such as the new Canadian and US regulations),<sup>90</sup> and a lack of AML/CT clarity on the issue of Bitcoin in Australia, impose an increased and unacceptable burden on Australian banks.<sup>91</sup> In addition, the risk of penalties and loss of reputation for any Australian bank found facilitating terrorism or organised crime increases the risk to a point whereby it is simply easier to avoid Bitcoin altogether.<sup>92</sup> The rejection of Bitcoin by the Big Four Banks stifles the legitimate use and development of virtual currencies in Australia. A prudent Australian Government should identify these issues and seek to expand the scope of Australia's AML/CT laws to include open and hybrid flow currencies as money.

## IV The Payment System Threat

### A *The Nature of the Threat*

Credibility, consumer confidence, and system security are essential characteristics of a payment system that regulators look to control and maintain. As explained, the entire premise of Bitcoin is that it relies on the fact that no single authority can control the creation of a Bitcoin.<sup>93</sup> The credibility of Bitcoin as an independent payment system can therefore be undermined by individuals within the system through acts such as 'pool mining' and hoarding. Pool mining occurs when miners pool their computer power to spread the financial risk of their operations. As a recent example, *GHash*, a British based pool miner, was recently identified amassing nearly half of the system's mining computing power.<sup>94</sup> In theory, *GHash* now effectively controls the payment system and can completely undermine the trust in the currency.<sup>95</sup> Likewise,

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<sup>88</sup> See Paul Smith, 'Westpac, ANZ trial Ripple payments, but Big Four Reluctant on Bitcoin' *Australian Financial Review* (online), 30 June 2015 <<http://www.afr.com/business/banking-and-finance/financial-services/westpac-anz-trial-ripple-payments-but-big-four-reluctant-on-bitcoin-20150605-ghhmsq>>; David Glance, 'NABs Bitcoin Ban a Symptom of the Digital Currency Threat', *The Conversation* (online), 11 April 2014 <<http://theconversation.com/nabs-bitcoin-ban-a-symptom-of-the-digital-currency-threat-25490>>.

<sup>89</sup> See Australian Transaction Reports and Analysis Centre, *Customer Due Diligence* (26 July 2014) <<http://www.austrac.gov.au/customerduediligence.html>>.

<sup>90</sup> See, eg, *An Act to Implement Certain Provisions of the Budget Tabled in Parliament on February 11, 2014 and Other Measures*, SC 2014, Bill C-31, Division 19 s 256(2)(h.1).

<sup>91</sup> See Jon Sothurst, 'The Real Reason Banks Don't Like Bitcoin', *CoinDesk* (online), 22 July 2014 <<http://www.coindesk.com/real-reason-banks-don-t-like-bitcoin/>>.

<sup>92</sup> *Ibid.*

<sup>93</sup> See Sky News, *Bitcoin Faces Biggest Threat Yet*, 17 June 2014, <<http://www.skynews.com.au/news/tech/2014/06/17/bitcoin-faces-biggest-threat-yet.html>>.

<sup>94</sup> *Ibid.*

<sup>95</sup> *Ibid.*

hording for speculative purposes, system fraud, hacking, and wide fluctuations in value all undermine Bitcoin's long-term credibility.<sup>96</sup>

Despite these threats, Bitcoin remains highly alluring as a payment system. In 2014, the OECD issued a working paper that encouraged policymakers to welcome the exploration and use of new payment technologies, such as Bitcoin, to improve efficiency and provide competition to high-cost incumbent intermediaries in the financial system.<sup>97</sup> In this regard, Bitcoin's real value is purported to be as a payment technology; a technology that has the potential to revolutionise the legacy payments industry.<sup>98</sup> As a payment system, Bitcoin solves an important problem—the unencumbered safe transfer of ownership without the need of an intermediary or trusted third party.<sup>99</sup> The removal of the intermediary removes transfer costs,<sup>100</sup> making Bitcoin highly attractive to cost-conscious businesses who are seeking to avoid or limit third party transaction costs.

In the early period of Bitcoin's existence, the only businesses that were willing to accept Bitcoin as payment were small cost-conscious and experimental business owners seeking to avoid reliance on credit card companies.<sup>101</sup> However, as the use and popularity of Bitcoin has grown, so too has the number and size of businesses accepting Bitcoin. This is demonstrated in this select list of US businesses that currently accept Bitcoin:<sup>102</sup>

- |                   |                   |
|-------------------|-------------------|
| • Overstock.com   | • Expedia         |
| • Zappos          | • Apple App Store |
| • Dell            | • PayPal          |
| • Subway          | • Ebay            |
| • Kmart           | • Virgin Galactic |
| • Victoria Secret | • Tesla           |
| • CVS             | • Wikipedia       |
| • Whole Foods     | • Target          |
| • Dish Network    | • Amazon          |

<sup>96</sup> See Payments Policy Department, above n 8, 8.

<sup>97</sup> See Adrian Blundell-Wignall, 'The Bitcoin Question: Currency Verses Trust-Less Transfer Technology' (OECD Working Papers on Finance, Insurance and Private Pensions No 37, OECD, 2014), 16.

<sup>98</sup> See, eg, John Heggestuen, 'Why Bitcoin Has Real Potential to Upend the Legacy Payment Systems', *Business Insider* (online), 19 July 2014 <<http://www.businessinsider.com.au/bitcoin-potential-upend-legacy-payments-system-2014-7>>; Carter Doughert, 'Bitcoin Targets Payment Business of Giants Visa to JPMorgan' *Bloomberg* (online), 23 January 2014 <<http://www.bloomberg.com/news/2014-01-22/bitcoin-targets-giants-visa-to-jpmorgan-with-lower-cost-payments.html>>.

<sup>99</sup> See Blundell-Wignall, above n 95, 15.

<sup>100</sup> See Jacob Harper, 'Wall Street's Bitcoin Bet: The New Payment System', *equities.com*, 11 June 2014 <<http://www.equities.com/editors-desk/currencies-forex/wall-street-s-bitcoin-bet-the-new-payment-system>>.

<sup>101</sup> See Brito, above n 29, 10-11.

<sup>102</sup> See, eg, Jonas Chokun, *Who Accepts Bitcoin as Payment?*, May 2014 BitcoinValues.net <<http://www.bitcoinvalues.net/who-accepts-bitcoins-payment-companies-stores-take-bitcoins.html>>; CoinDesk, *Where Can You Buy With Bitcoins?* (6 August 2014) <<http://www.coindesk.com/information/what-can-you-buy-with-bitcoins/>>.

- Home Depot
- Nike
- Sears
- Walmart

The corporate juggernauts have started to move. However, there is one limitation for these businesses — price volatility. Retailers do not want to be holding a full Bitcoin wallet in a volatile market. Consequently, the majority of retail businesses that accept Bitcoin as payment for the provision of goods or services contract the services of a third party conversion intermediary to avoid the price volatility.<sup>103</sup> The retailer does not hold Bitcoin; rather, the payment is processed through a third party such as *Coinbase* or *Bitpay*, which eliminates the exchange and volatility risk for the retailer.

For a fee of 1 per cent,<sup>104</sup> compared with 3-4 per cent on credit cards,<sup>105</sup> Bitcoin's third party transfer-conversion service providers create a cost effective buffer between the Bitcoin sender and receiver. Not having to pay large financial intermediary fees reduces overheads and maximises returns for retailers. This benefit is so valuable to businesses that several now offer significant discounts to customers who pay in Bitcoin.<sup>106</sup> Accepting credit cards also exposes businesses to additional administrative fees and potential charge-back fraud.<sup>107</sup> As a non-reversible payment system, Bitcoin eliminates misuse of customer charge-backs.<sup>108</sup>

The potential benefit of Bitcoin to the international traveller and remittance user is even more apparent. As one blogger has noted:

As long as my encrypted [Bitcoin] wallet exists somewhere in the world, such as on an email account, I can walk across national borders with nothing on me and retrieve my wealth from anywhere in the world with an internet connection.<sup>109</sup>

In March 2015, the World Bank reported that the average global cost of sending remittance was 7.72%, sending remittance from G8 countries was 7.19%, and sending remittance from G20 countries was 7.67%.<sup>110</sup> These fees can be considerably higher, particularly when using commercial banks and on lower volume remittance corridors. As an example, table 2 details the average cost percentage, based on February 2015 data, for sending \$200 AUD along select remittance corridors. On these figures, Bitcoin's potential in the remittance market is significant.

<sup>103</sup> See John Detrixhe, 'Wall Street Sees Bitcoin Legacy as Payment System: Currencies', *Bloomberg* (online), 17 January 2014 <<http://www.bloomberg.com/news/2014-01-16/wall-street-sees-bitcoin-legacy-as-payment-system-currencies.html>>.

<sup>104</sup> See Blundell-Wignall, above n 95, 15.

<sup>105</sup> *Ibid.*

<sup>106</sup> *Ibid.*

<sup>107</sup> See Australian Bankers Association Inc, *Code of Banking Practice* (ABA Sydney, 2013); Brito, above n 29, 12.

<sup>108</sup> See Elwell, above n 33, 5; Brito, above n 29, 12.

<sup>109</sup> See Dowd, above n 25, 73.

<sup>110</sup> The World Bank, 'Remittance Prices Worldwide: An Analysis of Trends in the Average Total Cost of Migrant Remittance Services', (2015) 13 *Payment Systems Development Group* 1.

Table 2: Average cost of sending \$200 AUD remittance

Corridor		Average Cost Percentage (February 2015)		
From	To	Commercial Bank	Money Transfer Operators	Total Average
Australia	China <sup>111</sup>	17	2.79	11.23
Australia	Lebanon <sup>112</sup>	14.54	7.07	12.73
Australia	Vanuatu <sup>113</sup>	21.9	18.02	20.61
Australia	Vietnam <sup>114</sup>	18.1	4.89	8.67

### B International Regulation

Unlike tax and money laundering legislation, international regulators have remained silent on payment system reform for virtual currencies. This is almost certainly due to the dominance, as described in Part II, of traditional payment systems such as Visa and Master Card.<sup>115</sup> As an example, consider the US regulatory framework. In the US, the most applicable legislation for regulating Bitcoin and virtual currencies as payment systems is the *Electronic Fund Transfer Act* ('EFTA'),<sup>116</sup> as applied through the Federal Reserve's *Regulation E*.<sup>117</sup> The purpose of the *EFTA* is to establish the respective rights and responsibilities of consumers and financial institutions in electronic fund transfers.<sup>118</sup> The *EFTA* defines electronic funds transfers as:

any transfer of funds, other than a transaction originated by check, draft, or similar paper instrument, which is initiated through an electronic terminal, telephonic instrument or computer or magnetic tape so as to order, instruct, or authorize a financial institution to debit or credit an account.<sup>119</sup>

Prima facie, *EFTA* does not apply to Bitcoin as the peer-to-peer flow of the system does not fall within the definition of a 'financial

<sup>111</sup> The World Bank, *Remittance Prices Worldwide Australia to China Corridor* (17 Feb 2015 figures) <<http://remittanceprices.worldbank.org/en/corridor/Australia/China>>.

<sup>112</sup> The World Bank, *Remittance Prices Worldwide: Australia to Lebanon Corridor* (16 Feb 2015 figures) <<http://remittanceprices.worldbank.org/en/corridor/Australia/Lebanon>>.

<sup>113</sup> The World Bank, *Remittance Prices Worldwide: Australia to Vanuatu Corridor* (18 Feb 2015 figures) <<http://remittanceprices.worldbank.org/en/corridor/Australia/Vanuatu>>.

<sup>114</sup> The World Bank, *Remittance Prices Worldwide: Australia to Vietnam Corridor* (17 Feb 2015 figures) <<http://remittanceprices.worldbank.org/en/corridor/Australia/Vietnam>>.

<sup>115</sup> See, eg, Carter Doughert, 'Bitcoin Targets Payment Business of Giants Visa to JPMorgan' *Bloomberg* (online), 23 January 2014 <<http://www.bloomberg.com/news/2014-01-22/bitcoin-targets-giants-visa-to-jpmorgan-with-lower-cost-payments.html>>.

<sup>116</sup> *Electronic Fund Transfer Act*, 15 USC § 1693 (1978).

<sup>117</sup> See Matthew Kien-Meng Ly, 'Coining Bitcoins "Legal-Bits": Examining the Regulatory Framework For Bitcoin and Virtual Currencies', (2014) 27(2) *Harvard Journal of Law and Technology* 587, 599; Brito, above n 29, 35.

<sup>118</sup> *Ibid.*

<sup>119</sup> *Electronic Fund Transfer Act*, 15 USC § 1693a (7).

institution'.<sup>120</sup> An exception may be made for those transactions involving intermediary exchanges or transfer-conversion service providers, such as *Coinbase* or *Bitpay*, which operate and hold accounts for customers. The effect of this is that the *EFTA* only has the potential to capture some transactions on the Bitcoin network. As it currently stands, there is no intention to remedy this inadequacy.<sup>121</sup>

### C *Australian Regulation*

In contrast to the US, Australia's current regulatory framework captures Bitcoin and other virtual currencies. The Reserve Bank of Australia ('RBA') broadly defines a 'payment system' as 'payment instruments by which individual payments are made or funds transferred, ranging from cash to sophisticated mechanisms on the Internet'.<sup>122</sup> The applicable legislation is the *Payment Systems (Regulation) Act 1998* (Cth) ('*PSRA*'), which defines a payment system as a 'funds transfer system that facilitates the circulation of money, and includes any instruments and procedures that relate to the system'.<sup>123</sup> As Bitcoin facilitates the circulation of money, it would fall within the definition of a payment system for the purposes of the *PSRA*.

Under the *PSRA*, the RBA is empowered to regulate a 'designated payment system' if it is in the public interest.<sup>124</sup> In determining whether it is in the public interest for the RBA to designate a system as a payment system, the RBA must have regard to: (a) the system being financially safe for use by participants; (b) the efficiency of the system; (c) the competitiveness of the system; and, (d) whether or not the system is materially causing or contributing to increased risk to the financial system.<sup>125</sup>

In designating a system as a payment system, the *PSRA* vests four principle powers on the RBA:

1. The power to impose an access regime on system participants.
2. The power to make participants in the system comply with system standards.
3. The power to arbitrate disputes relating to the system.
4. The power to direct participants in the system.<sup>126</sup>

<sup>120</sup> 'Financial institution' is defined as 'a State or National bank, a State or Federal savings and loan association, a mutual savings bank, a State or Federal credit union, or any other person who, directly or indirectly, holds an account belonging to a customer', *Ibid* § 1693a (9).

<sup>121</sup> See Kien-Meng Ly, above n 115, 599.

<sup>122</sup> Sheelagh McCracken, Joanna Bird, John Stumbles and Greg Tolhurst, *Banking and Financial Institutions Law* (Thomson Reuters, 8<sup>th</sup> ed, 2013) 130.

<sup>123</sup> *Payment Systems (Regulation) Act 1998* (Cth) s 7.

<sup>124</sup> *Ibid* s 11.

<sup>125</sup> *Ibid* s 8.

<sup>126</sup> *Ibid* s 10(2).

Currently, the RBA has designated Bankcard, MasterCard, Visa, and EFTPOS debit card as payment systems.<sup>127</sup> It should be noted that the RBA may grant exemptions from the *PSRA*,<sup>128</sup> and that systems will only be designated as a payment system when the performance of existing self-regulatory arrangements prove unsatisfactory.<sup>129</sup> In 2004, the RBA exempted purchase payment facilities from the *PSRA* where: (a) the total outstanding amount is less than \$1 million; or (b) where payments can only be made to a maximum of 50 persons; or (c) where its obligations were guaranteed by an authorised deposit taking institution or the government.<sup>130</sup> In 2006, the RBA increased the outstanding amount from \$1 million to \$10 million and exempted gift cards, pre-paid mobile phone accounts, loyalty schemes and electronic road toll devices from the *PSRA*.<sup>131</sup>

While it is difficult to calculate, the exchange volume of Bitcoin conversion into Australian dollars is reported to constitute approximately 4% of the total global volume of conversions. This places Australia in equal fourth place in terms of global Bitcoin conversion.<sup>132</sup> Based on the figures provided in table 1, this amounts to an estimated average daily volume of US\$2 226 631. On these figures, it is likely that Bitcoin may not fall within the current RBA granted exceptions.

In 2013, the RBA's Payment Systems Board reported that, while low fees and fast transaction times were features of great appeal, these attributes were not of themselves sufficient for the wide adoption of Bitcoin as a payment system.<sup>133</sup> From a payment system perspective, the Board concluded that 'given that it [Bitcoin] has not been widely traded or adopted, risks and policy concerns are currently limited in the Australian context'.<sup>134</sup> This position has not altered over the last 24 months. In March 2014 and again in March 2015, the RBA reported that the risk posed by virtual currencies, including Bitcoin, to the Australian payments system remained limited.<sup>135</sup> Reinforced by the continued reluctance of the Big Four Banks to support Bitcoin, very few Australian

<sup>127</sup> See Reserve Bank of Australia, *Current Regulations: Designations Made Under the Payment Systems (Regulation) Act 1998* (6 August 2014) <<http://www.rba.gov.au/payments-system/legal-framework/current-regulations.html>>.

<sup>128</sup> See *Payment Systems (Regulation) Act 1998* (Cth) s 25.

<sup>129</sup> See Sheelagh McCracken et al, above n 120, 159.

<sup>130</sup> See Reserve Bank of Australia, 'Regulation of Purchased Payment Facilities under the *Payment Systems (Regulation) Act 1998*' (Media Release, 2004-04, 10 March 2004).

<sup>131</sup> See Reserve Bank of Australia, 'Payment Systems Reforms' (Media Release, 2006-02, 27 April 2006).

<sup>132</sup> Conversion into Australian dollars ties with GBP at 4%. Conversion into Euro is estimated to be 7%, Chinese Yuan Renminbi 27% and USD 37%. See Bitcoin Charts, *Exchange Volume Distribution by Currency* (July 2014) <<http://bitcoincharts.com/charts/volumepie/>>.

<sup>133</sup> See Payments Policy Department, above n 8, 8.

<sup>134</sup> Ibid 10.

<sup>135</sup> See Reserve Bank of Australia, *Submission to the Financial System Inquiry* (March 2014) [8.5.3] <<http://www.rba.gov.au/publications/submissions/fin-sys-inquiry-201403/dev-innovation.html>>; Reserve Bank of Australia, 'Review of Card Payment Regulation' (Issues Paper, Reserve Bank of Australia, March 2015) 15.



merchants currently accept open-flow virtual currencies as a means of payment. Consequently, the RBA does not foresee any significant increase in merchant use of virtual currencies or a need to designate the platform as a payment system in the near term.<sup>136</sup>

The RBA's position is sound. Unlike Australia's watch and wait approach toward AML/CT regulation — regulation that has the principle objective of combatting international financial crime — payment system regulation is principally concerned with the domestic payment system and current threats to this system remain low. Further, current payment system legislation allows the RBA to respond to any increased threat posed by virtual currencies without the need for significant legislative reform. This is not the case with AML/CT legislation.

## V Conclusion

It is clear that virtual currencies have revolutionary potential. Bitcoin, the largest virtual currency, has grown exponentially in recent years and this growth is bringing a degree of permanence for, and dependability on, open-flow virtual currencies. As a result, regulators can no longer ignore virtual currencies. While the increase in international regulatory activity over the past 12 months (at the time of writing) suggests that some governments understand this, with the exception of one recent tax ruling Australian regulators appear reluctant to act.<sup>137</sup>

With respect to AML/CT policy, adopting a passive wait-and-watch approach is no longer acceptable. It is clear that both hybrid and open-flow currency systems are becoming more attractive to criminal organisations. Even if this activity is predominately occurring extraterritorially, the objective of Australia's AML/CT is to fulfil and address Australia's *international obligations* in combating money laundering and financing terrorism. The US, Canada and Singapore have all undertaken regulatory reform in an attempt to mitigate the criminal risk associated with Bitcoin and other open-flow virtual currencies. The lack of regulatory reform is also having a secondary effect on the market as Australian Banks continue to avoid servicing Bitcoin businesses. This avoidance is curtailing the legitimate use of virtual currency systems and business innovation in the sector. A prudent Australian Government should seek to reform AML/CT legislation to include open and hybrid flow currencies as money.

In contrast to AML/CT policy, the current approach to Bitcoin as a payment system is sound. There is currently no requirement to designate Bitcoin as a payment system under the *PSRA*, which, unlike Australian AML/CT regulations and US payment system regulations, is capable of capturing Bitcoin and other virtual currencies under its broad definition of

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<sup>136</sup> Ibid.

<sup>137</sup> See Australian Taxation Office, 'ATO Delivers Guidance on Bitcoin', (Media Release, 20 August 2014) <<https://www.ato.gov.au/Media-centre/Media-releases/ATO-delivers-guidance-on-Bitcoin/>>.

‘payment system’ without amendment. At present, mass migration away from more established payment systems toward Bitcoin and other virtual currencies is unlikely. Few Australian merchants currently accept open-flow virtual currencies as legitimate means of payment and the RBA does not foresee any significant increase in merchant use of virtual currencies in the short term. As such, Bitcoin is rightly considered a low threat to the wider Australian payment system at the present time.